



# State of Utah

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DIVISION OF OIL, GAS AND MINING

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*Today Suite*

March 3, 1997

TO: File #2

THRU: Daron Haddock, Permit Supervisor

*DH*

FROM: James D. Smith, Reclamation Specialist

*JDS*

RE: Application for Exemption for Coal Extraction Incidental to the Extraction of Other Minerals, Sunray Mineral Products (Utah State Coal Lease #ML 43377), Folder #2, Wayne County, Utah

## SUMMARY

Sunray Mineral Products has requested exemption from the Utah Coal Mining Rules, as allowed under Section R645-106 of the Rules, in order to commercially exploit a weathered, low-grade coal deposit in Wayne County. The product is intended for use as a soil conditioner rather than as fuel. The operation, as proposed in the current application, does not satisfy the requirements for exemption in Sections R645-100-400 and R645-106.

An application for exemption for personal, non-commercial use of this coal (R645-100-411) was made in 1992 by Dick Shumway. Mr. Shumway is the signer of the current Sunray application. The weathered coal was to be used as a soil conditioner. Judging from copies of correspondence in a file kept by Pam Grubaugh-Littig, Mr. Shumway complied with DOGM's requirements and obtained the exemption; however, no approval document is in Pam's file. Permitting apparently was done through DOGM's minerals program. An inspection of the site by Holland Shepherd in May 1993 found evidence of reclamation work but none of recent mining activity (see attached copy).

## TECHNICAL ANALYSIS

### **MINERALS TO BE EXTRACTED (R645-106-312)**

Analysis:

The material to be extracted is a low-rank, weathered coal. Various names are applied to this type of coal, including "leonardite coal". Weathered coal is often rich in humic acid and similar acids such as fulvic and ulvic that give the coal value as a soil conditioner. The

word "humate" commonly refers to rock containing abundant humic acid along with mineral components such as clay and silt. Humate can include thin coals interbedded with humic shales. Coal seams as thick as three feet are included in strata at Harley Dome, Utah described as humate (Jackson, 1983), but some consider weathered coal to be distinct from humate (Siemers and Wadell, 1977).

There are currently three operations mining humate or humic shale in Utah. The mined materials are used to produce various "health" products. These mining operations are regulated by the Minerals Section of DOGM. Humates, both humic shales and weathered coals, have been mined in several states for various uses such as soil enhancers, drilling fluid additives, and stains (Siemers and Wadell, 1977; Hoffman and others, 1994). I talked by telephone with Jim O'Hara of the New Mexico Mining and Minerals Division, who told me there is currently one active humate mining operation in New Mexico. The product is used as a soil enhancer. The operation is small, on private land, and is regulated under New Mexico's "hard rock" mining regulations. The material mined is described as humate or humic shale, not coal.

There are no analyses in the Sunray Mineral application that indicate if humic and similar acids are present in this weathered coal deposit. Results of three proximate analyses of the coal are included in the application, summarized in Table 1 below. Sampling methods and locations are not described but it has been assumed that these are valid channel samples from coal freshly exposed in the existing pit. Low pH and high sulfur, as found in these three samples, are typical of humic shales and coals.

Utah Coal Mining rules (R645-100-200) define coal as "combustible, carbonaceous rock, classified as anthracite, bituminous, subbituminous, or lignite by ASTM Standard D388-77". ASTM Standard D388-77 was updated in 1995 to D388-95. A copy of Standard D388-77 could not be found but, as far as can be determined by using additional references, Btu values used to define coal rank have not been changed between D388-77 and D388-95. All three of Sunray Mineral's samples have Btu values below 6300 Btu/lb so fall into the lowest coal rank, lignite B. There is no minimum BTU value below which a material would not be considered coal based on BTU content.

Ash greater than fifty percent in sample #3 indicates this sample is not coal but rather coaly or carbonaceous shale or siltstone (ASTM Standard D121-95, referenced by D388-95).



<b>Table 1 PROXIMATE ANALYSES</b>						
	AS RECEIVED			DRY		
Sample	#1	#2	#3	#1	#2	#3
Percent moisture	13.14	7.43	12.98	*****	*****	*****
Percent ash	38.27	39.33	61.83	44.06	42.49	71.05
Percent volatiles	24.67	26.90	18.62	28.40	29.06	21.40
Percent fixed carbon	23.92	26.34	6.57	27.54	28.45	7.55
BTU/lb	5551	6003	1390	6391	6485	1597
Percent sulfur	2.13	2.52	1.88	2.45	2.72	2.16
pH	2.70	*****	2.85			

In the cover letter with the application, Mr. Shumway states clearly that it is not shale that is to be mined but coal. Sunray Mineral Products' right-of-entry is under a State Institutional and Trust Lands Administration (SITLA) coal lease, and the "coal" seam has been mined previously as a DOGM permitted coal-mining operation. Therefore, it is recommended that an exemption not be granted under R645-106-300, even though the tested material does not have any apparent current value as a fuel.

The coal seam is shown to be three to five feet thick in Exhibit A of the application. Humic shales removed during coal mining would need to be stockpiled because they belong to another lessee (see attached copy of 11/15/96 e-mail to Tony Gallegos from John Blake, SITLA Minerals Management). Because of this, "coal" mined by Sunray Mineral Products could not be diluted with humic shale to the point that the "16 2/3" exemption under R645-106-500 would apply, at least not by the mining operation as described in the Sunray Mineral Products application.

These impediments to getting an exemption from the Coal Mining Rules could possibly be removed through cooperation or negotiation between Sunray Mineral Products, SITLA, and the lessee of the other minerals.

Sunray Mineral Products

March 3, 1997

Page 4

Finding:

Exemption cannot be granted under Sections R645-100-400 and R645-106 of the Coal Mining Rules because, based on the SITLA coal lease and a previous, permitted, coal-mining operation, coal is the material to be mined.

**ESTIMATE OF ANNUAL PRODUCTION OF COAL  
AND OTHER MINERALS (R645-106-313)**

Analysis:

Initial production of soil conditioner is estimated to be three thousand tons per year. Production could reach as much as twenty to thirty thousand tons yearly if market expansion and product availability meet expectations.

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.

**ESTIMATED ANNUAL REVENUES FROM COAL  
SALES AND OTHER MINERALS (R645-106-314)**

Analysis:

Based on a price of approximately \$40 per ton, initial revenues are estimated to be \$120,000. If market expansion and product availability meet expectations, yearly revenues of \$1,000,000 are possible.

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.



**WHERE MATERIALS ARE TO BE USED IF NOT SOLD  
(R645-106-315)**

Finding:

This section does not apply to the proposed operation.

**BASIS FOR ANNUAL ESTIMATES (R645-106-316)**

Analysis:

Initial estimate of production is based on a purchase offer for three thousand tons.

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.

**PROPERTY LOCATION (R645-106-317)**

Analysis:

The SITLA coal lease covers 160 acres in the sw/4 Sec. 2, T. 27 S., R. 9 E. A location map is included in the application. There is a map of the existing pit mine in Appendix A, but it is not sufficient to locate the boundaries of the proposed operation and distinguish the proposed operation from other mining areas. It is not clear if other mines operate in the area, but another lessee holds the State lease to non-coal minerals in this section of State land.

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules except for the following deficiency.

1. Information on the boundaries of the proposed operation is not sufficient to locate and distinguish it from other mining areas or properties of other lessees.

### **ESTIMATE OF ACRES IN MINING AREA (R645-106-318)**

**Analysis:**

Sunray Mineral Products states in its application that the SITLA lease covers 160 acres and it is known that 60 acres are underlain by weathered, oxidized coal. No data are given in support of this 60-acre figure.

It isn't known how large of an area is represented by the samples analyzed for the three reports included in the application. Coal shipped from this pit in the late 1970's was rejected by Nevada Power because of its inferior quality. There may have been analyses done to determine this. If results of those analyses could be obtained, they could possibly help to define the extent of the weathered coal.

Weathered zones in coal in New Mexico are described as extending no more than a few hundred feet into the subsurface from the outcrop (Siemers and Wadell, 1977) so exemption from the Coal Mining Rules may need to exclude mining of higher-grade coals that may be uncovered by removal of the weathered material.

**Finding:**

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules except for the following deficiency:

- 1). Information on the estimate of the mining area is inadequate.

### **EVIDENCE OF PUBLICATION IN A NEWSPAPER (R645-106-319)VI**

**Analysis:**

A copy of the notice published in *The Richfield Reaper* newspaper and a copy of the Affidavit of Publication are included in the application. Publication was on November 27, 1996.

**Finding:**

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.



### **REPRESENTATIVE CROSS SECTIONS (R645-106-320)**

**Analysis:**

At the bottom of Exhibit A is a generalized east-west cross section showing the stratigraphic thickness of the overburden and coal at the west edge of the old pit.

**Finding:**

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.

### **MAP OF MINING AREA (R645-106-321)**

**Analysis:**

At the top of Exhibit A of the application is shown the general configuration and orientation of the existing pit. The map is not to scale. The area that will be affected is not identified.

**Finding:**

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules except for the following deficiency.

- 1). There is no map to the appropriate scale that clearly identifies the mining area.

### **DESCRIPTION OF MINING AND PROCESSING ACTIVITIES FOR THE MINING AREA (R645-106-322)**

**Analysis:**

Strip mining will begin at the edge of the old pit. Overburden, consisting of three to ten feet of shale and sandstone, will be removed from a strip and the coal removed. Overburden from the next strip will be used to reclaim the previous strip. The natural surface is Mancos Shale, which is fairly barren of vegetation. Excavation and reclamation will result in a more sandy material that may better support vegetation.

Sunray Mineral Products

March 3, 1997

Page 8

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.

**SUMMARY OF SALES COMMITMENTS AND AGREEMENTS FOR  
FUTURE DELIVERY (R645-106-323)**

Analysis:

A copy of a sales agreement with Westwood Enterprises of Grand Junction, Colorado is in the application. The agreement is for three thousand tons of bulk material suitable for use as a soil conditioner. An expanding market for coal humate to be used as soil conditioner is anticipated. Coal humates have been used to restore productivity to lands that have been damaged by spills of toxic materials or overuse of chemical fertilizers or pesticides.

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.

**DESCRIPTION OF OTHER MINERALS TO BE USED COMMERCIALY  
BY APPLICANT (R645-106-324)**

Analysis:

No commercial use of minerals other than the coal humates is described .

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.



**OTHER OPERATIONS HAVING EXTRACTED COAL OR OTHER  
MINERALS PRIOR TO APPLICATION FOR EXEMPTION (R645-106-325)**

Analysis:

Coal from this State coal lease was mined by a DOGM permitted coal-mining operation in the late 1970's, although the operation was not economically viable because of the low quality of the coal. The permittee and operator of that mine are not identified in the current application for exemption.

An application for exemption for personal, non-commercial use of this coal (R645-100-411) was made in 1992 by Dick Shumway. (Mr. Shumway is the signer of the current Sunray Mineral Products application.) The weathered coal was to be used as a soil conditioner. Judging from copies of correspondence in a file kept by Pam Grubaugh-Littig, Mr. Shumway complied with DOGM's requirements and obtained the exemption; however, no approval document is in Pam's file. Permitting apparently was done through DOGM's minerals program. An inspection of the site by Holland Shepherd in May 1993 found evidence of reclamation work but none of recent mining activity (see attached copy). There is no documentation on this prior exemption in the current application for exemption. There is no information on production under either the coal mining permit in the 1970's nor the exemption granted in 1992.

At one time there was at least one coal stockpile at the mine. There is no mention of stockpiles in the current application. Based on information from DOGM personnel who have visited the site at various times, there are no longer coal piles at the pit.

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules except for the following deficiencies.

- 1). There is no documentation on the previous exemption from the Coal Mining Rules.
- 2). There is no information on cumulative production.

Sunray Mineral Products  
March 3, 1997  
Page 10

**CUMULATIVE PRODUCTION OF COAL NOT TO EXCEED 16 2/3  
PERCENT (R645-106-511)**

Analysis:

See the analysis under **MINERALS TO BE EXTRACTED (R645-106-312)**

Finding:

The proposed operation does not meet the requirements for exemption under Section R645-106-511 of the Coal Mining Rules.

**STRATUM ABOVE OR IMMEDIATELY BELOW OTHER MINERALS TO  
BE EXTRACTED (R645-106-512)**

Analysis:

No other minerals are to be extracted.

Finding:

This section of the Coal Mining Rules does not apply.

**CUMULATIVE REVENUE FROM COAL NOT TO EXCEED 50 PERCENT  
(R645-106-513)**

Analysis:

All revenue will be from coal mined under a State coal lease. Another lessee holds rights to non-coal materials.

Finding:

The proposed operation does not meet the requirements for exemption under Section R645-106-511 of the Coal Mining Rules.



**A COMMERCIALY VALUABLE MINERAL FOR WHICH A MARKET EXISTS (R645-106-521)**

Analysis:

Coal humate is a commercially valuable material for which a market exists. A copy of a sales agreement with Westwood Enterprises of Grand Junction, Colorado is in the application. The agreement is for three thousand tons of bulk material suitable for use as a soil conditioner. An expanding market for coal humate to be used as soil conditioner is anticipated. Coal humates have been used to restore productivity to lands that have been damaged by spills of toxic materials or overuse of chemical fertilizers or pesticides.

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.

**SALE TO OR USE BY A RELATED ENTITY (R645-106-522)**

Analysis:

The application for exemption doesn't identify any relationship between Sunray Mineral Products and Westwood Enterprises other than the sales agreement already referred to. The sales agreement appears to be a valid offer to purchase three thousand tons of the coal humates for a legitimate business purpose. DOGM made no further investigation of the relationship between these two companies.

Finding:

Information provided in the application is adequate to satisfy this section of the Coal Mining Rules.

**RECOMMENDATION**

The application for exemption should not be approved.

Sunray Mineral Products appears to be caught in a paradoxical situation. The material that is desired to be mined is very poor quality coal; an argument can be made that it is not coal at all and therefore not subject to the Utah Coal Mining Rules. There is a market for this

Sunray Mineral Products

March 3, 1997

Page 12

“humate” as soil conditioner. However, the right of entry to the “humate” is by a Utah State Institutional and Trust Lands (SITLA) coal lease and rights to non-coal minerals are held by another lessee. As long as SITLA, the owner, defines the material as coal and as long as Sunray’s right-to-mine is limited to coal only, it would seem DOGM is constrained to treat the material as coal and apply the Coal Mining Rules.

Sunray Mineral Products can perhaps resolve the problem through negotiation with SITLA and the lessee of the non-coal minerals.

### **REFERENCES**

- Hoffman, G. K., Verploegh, J., and Barker, J. M., 1994, Geology and chemistry of humate deposits in the southern San Juan Basin, New Mexico, pre-print number 94-142, SME Annual Meeting, Albuquerque, New Mexico-February 14-17, 1994, 10 p.
- Jackson, A. L., 1983, Humates and their development at Harley Dome, Utah, Grand Junction Geological Society-1983 Field Trip, pp. 17-19.
- Siemers, C. T. And Wadell, J. S., 1977, Humate deposits of the Menefee Formation (upper Cretaceous), northern New Mexico, Supplement to the New Mexico Geological Society Guidebook, 28th Field Conference, San Juan Basin III, 21 p.